

# PATENT SPECIFICATION

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## DRAWINGS ATTACHED

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### (54) AIR BAG SAFETY DEVICE FOR MOTOR VEHICLES

(71) We, KLIPPAN GMBH, a Germany Company, of 15 Kohfurth 2 Norderstedt 3, Hamburg, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

The present invention relates to an air bag safety device for motor vehicles for preventing the hazard of injuries to the passengers of a motor vehicle if the vehicle suffers a collision it is known to provide within the vehicle an air bag that is abruptly inflated if the vehicle is involved in an accident. A gas cartridge is usually employed for the inflation of the air bag to introduce a gas into the air bag. A disadvantage of devices of this type is the high cost involved for making such a device fail-safe.

It is an object of the present invention to provide an improved air bag which does not require any special gas cartridge and no additional devices for opening such a gas cartridge.

In accordance with the present invention the inner wall of the air bag is coated with a substance adapted to generate a gas on ignition for inflating the air bag.

With an air bag of this type, the coating needs to be fired in one spot only, to develop a gas for filling the air bag. This filling operation may be induced to occur very quickly by employing a readily inflammable coating e.g. coating of black powder, i.e. black gunpowder or a similar mixture consisting of sodium nitrate, charcoal and sulphur. Moreover, there exists the possibility to control in advance the filling of the air bag and the direction of its development by a suitable distribution of the coating on the inner wall of the air bag. Thus the coating is preferably arranged in discrete sections on the inner wall of the air bag.

The coating may be designed by employing a separate sheet attached to a [Price 25p]

laminated material, or by providing a foamed material web in the air bag whereby the sheet of the laminated material has been impregnated with a liquid containing the powder.

It has been found to be suitable if the air bag is provided with air intake openings. This entails the advantage that during the inflation of the air bag air is sucked in from the passenger compartment, and this air further enhances the combustion. Furthermore the pressure wave generated during the inflation of the air bag is smaller since less additional gas for the development of the air bag is forced into the passenger compartment, as compared for example when employing a gas cartridge.

The ignition of the coating may be provided in principle by chemical action. It is, however, more advantageous to employ electrical ignition since this type of ignition is more reliable and less costly.

In the following, one embodiment of the invention will be described by way of example with reference to the appended drawing wherein,

Fig. 1 is a fragmentary top view of an air bag portion;

Fig. 2 is a cross-section through the wall of the air bag; and

Fig. 3 schematically shows an air bag during its inflation by explosive action.

The air bag shown in the drawing consists of a plastic sheet 1 which is coated on its inner side with a coating 2 consisting of a substance adapted to generate a gas when ignited, which may be in the nature of an explosive or a propellant-type charge.

The coating 2 is arranged in discrete sections 6 on the inner wall of the air bag 1. Air intake openings 3 are arranged in the plastic sheet between the discrete coating sections. During the inflation of the air bag air from the passenger compartment may enter into the air bag according to the arrows 4

Two electrical leads 5 are provided for igniting the explosive or gas-generating

coating 2. These leads 5 are connected to a power source through an electric switch not shown in the drawing, which closes when the vehicle deceleration exceeds a predetermined threshold value, and fires the discrete section 6 of the coating 2. An ignition or explosion of the coating in the discrete section 6 induces successively also the explosion of the material in the other sections. Thus the explosion advances along the interior wall of the air bag so that due to the pressure of explosion the air bag will be urged outwardly in all directions and will be unfolded to its full size, simultaneously drawing in air through the intake openings 3.

**WHAT WE CLAIM IS:—**

1. An air bag safety device for motor vehicles for the prevention of injuries to the passengers in collisions, in which the inner wall of the air bag is coated with a substance adapted to generate a gas on ignition for inflating the bag.

2. An air bag safety device as claimed in claim 1, wherein the coating is arranged in discrete sections on the inner wall of the air bag.

3. An air bag safety device as claimed in claim 1 or 2, wherein the air bag is provided with an electrical ignition device for igniting the coating.

4. An air bag safety device as claimed in any of the preceding claims, wherein the air bag is provided with air intake openings.

5. An air bag safety device as claimed in any of the foregoing claims wherein the gas generating substance is an explosive substance.

6. An air bag safety device substantially as herein described and illustrated.

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